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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,288	04/19/2004	Chien-Hua Chen	200308991-1	9906
22879	7590	03/18/2008		
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			EXAMINER GHYKA, ALEXANDER G	
			ART UNIT	PAPER NUMBER
			2812	
			NOTIFICATION DATE	DELIVERY MODE
			03/18/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/826,288

Applicant(s)

CHEN ET AL.

Examiner

Alexander G. Ghysa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36, 41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) 19-36, 41 and 42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The Applicants' RCE of 1/18/2008 has been considered and entered in the record. The following new rejections are made in view of Applicants' amendments. The Applicants' arguments are considered moot in view of the new grounds of rejection. Claims 1-18 are under consideration.

Claim Objections

2. Claim 16 further requires "bonding a wafer having at least one contact probe". The Claims are unclear as to whether the contact probe is the same as the one referred to in independent Claim 1, or a separate contact probe. Further clarification is requested.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 1-8, 11-15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman (USPN 6503831) in view of Arney et al (US 5,235,187) and Hantscel et al (US 2004/0123651).**

Referring to Figs. 20 and related text, Speakman discloses [Re claim 1] a method of making a microelectromechanical system device comprising: releasing a micromover component 1302, and coating the micromover component with a first self-aligned film; [Re claim 2] wherein the step of coating comprises selectively depositing a coating composition only on the micromover component. (see col. 44, lines 23-29) ; [Re claims 3-4] wherein the film comprises at least one of a polymer, PMMA and an epoxy photoresist; wherein the polymer is thermoplastic (see col. 44, lines 23-52). The Examiner notes that before being released the micromover cannot function as a MEMS (see col. 44, lines 22-28).

However, Speakman et al fails to disclose expressly coating the micromover component after releasing the micromover component and affixing contact probes to the device after coating the micromover component.

Arney et al disclose methods of fabricating integrated self aligned tunneling tips which comprise a micromover. See Figures 1A and 2. Arney et al further disclose coating a piezoelectric film on a beam in order for the beam to be moved. See column 12, lines 10-20. Moreover, Arney et al disclose removal of the oxide leaves a gap between the isolated structure and the underlying substrate to release the support beam 24, wherever relative motion is desired. See column 17, lines 20-30. After the removal of the oxide (the release of the beam) the beam is coated. See column 17, lines 35-45 and lines 65-70.

Hantschel et al disclose a scanning probe system that uses a micromover, and discloses the equivalence of attaching the tips after or before releasing the micromover. See page 9, paragraph 82, and Figures 17 and 18.

It would have been obvious, for one of ordinary skill in the art, at the time of the invention, to release the micromover of Speakman et al and then coat the micromover, for its benefit in forming a micromover as discussed by Arney et al. As both references pertain to micromovers in MEMS, a *prima facie* case of obviousness is established. The use of a known method, as discussed by Arney, to form a known structure, as disclosed by Speakman et al is *prima facie* obvious. Furthermore, with respect to affixing the contact probes to the device, it would have been obvious for one of ordinary skill in the art to affix the tips after the release in the process of Speakman et al, as Hantschel et al disclose that the contact probes can be affixed before or after the release of the micromover. As Hantschel et al disclose that the sequence of forming the tips is not critical to the device, it would have been obvious for one of ordinary skill in the art to affix the tips after coating the micromover component. Moreover, the Examiner notes that selection of any order of performing process steps is *prima facie* obvious, in the absence of unobvious results. See *In re Burnhaus*, 69 USPQ 330 (CCPA 1946).

[Re claim 5] Speakman also discloses wherein the polymer is thermoset (see col. 31, lines 11-17);

[Re claim 6] wherein coating the micromover component comprises adjusting a coating parameter to control the film thickness; [Re claim 7] wherein adjusting a coating parameter comprises selecting a solid to solvent ratio; [Re claim 8] wherein adjusting a coating parameter comprises selecting an amount of film material to deposit (see col. 2, lines 30-34, and col. 17, line 45-col. 18, line 34);

[Re claim 11] coating the micromover component with a second self-aligned film; [Re claim 12] wherein the second self-aligned film comprises a different material from the first self-aligned film (see col. 6, lines 21-34).

[Re claims 13-15] Speakman fails to disclose expressly wherein one of the self-aligned films comprises a thermoplastic polymer and the other comprises a thermoset polymer; wherein the first self-aligned film and the second self-aligned film have different hardness; wherein the first self-aligned film and the second self-aligned film have different glass transition temperatures. However, these would have been obvious in light of Speakman, which discloses a large variety of materials. The choice of the two materials depends on the desired characteristics of a specific application.

[Re claim 18] Speakman discloses wherein the first self-aligned film is adapted for data storage, anti-wear, anti-reflective, desiccant or an anti-stiction (see col. 11, lines 1-44).

Therefore, it would have been obvious to use the teaching of Speakman and Arney et al to obtain the invention as specified in claims 1-8, 11-15, and 18.

4. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman, Arney et al and Hantschel et al, as applied above, in view of Yao et al. (USPN 6617657, hereinafter "Yao").

Speakman, Arney et al and Hantschel et al disclose substantially the limitations of claims 9-10, as shown above. The references also disclose treating a surface of the micromover component prior to coating and applying an adhesion promoter to the micromover component (see col. 18, line 47-col. 19, line 3) of Speakman.

But the references do not disclose expressly the use of plasma treatment.

However, the missing limitation is well known in the art because Yao discloses this feature (See col. 5, lines 1-15).

A person of ordinary skill is motivated to modify Speakman and Arney et al with Yao to obtain clean surfaces with better adhesive property by a clean and well-proven method.

Therefore, it would have been obvious to combine Speakma, Arney et al and Hantschel, with Yao to obtain the invention as specified in claims 9-10.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Speakman, Arney et al and Hantschel et al, as applied above, in view of Jacobson et al. (USPN 6587408, hereinafter "Jacobson").

Speakman and Arney et al disclose substantially the limitations of claims 16, as shown above.

But it fails to disclose expressly [Re claim 1 6] bonding a wafer having at least one contact probe or AFM tip opposite the self-aligned film

However, the missing limitations are well known in the art because Jacobson discloses these features (See Figs.3C-3F and col. 8, lines 5-23).

A person of ordinary skill is motivated to modify Speakman, Arney et al and Hantschel et al with Jacobson for its benefit in placing the probe. Therefore, it would have been obvious to combine Speakman and Arney et al with Jacobson to obtain the invention as specified in claim 16.

Allowable Subject Matter

Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The cited prior art references do not anticipate or make obvious, *inter alia*, further comprising bonding a wafer having at least one contact probe or AFM tip opposite the

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self-aligned film and further fabricating a contact atomic resolution storage device as required by the afore mentioned Claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Friday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AGG
March 6, 2008

ALEXANDER G. GHYKA

PRIMARY EXAMINER

AU 2812

/Alexander G. Ghyka/